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OPENING ADDRESS of NASSAU W. SENIOR, ESQ., as PRESIDENT
of SECTION F (*Economic Science and Statistics*), at the MEETING
of the BRITISH ASSOCIATION, at Oxford, 28th June, 1860.

IN 1856 the General Committee of the British Association decided that the Section over which I have the honour to preside, should be entitled "The Section of Economic Science and Statistics."

I have looked through the papers which since that time have been communicated to us, and I have been struck by the unscientific character of many of them.

I use that word not dyslogistically, but merely distinctively, merely as expressing that the writers have wandered from the domain of science into that of art.

I need scarcely remind you that a Science is a statement of existing facts, an Art a statement of the means by which future facts may be brought about or influenced. A science deals in premises, an art in conclusions. A science aims only at supplying materials for the memory and the judgment. It does not presuppose any purpose beyond the acquisition of knowledge. An art is intended to influence the will: it presupposes some object to be attained, and it points out the easiest, the safest, or the most effectual conduct for that purpose.

The subjects to which the British Association has directed our attention are Economic Science and Statistics.

Economic Science, or, to use a more familiar name, "The Science of Political Economy," may be defined as "The science which states the laws regulating the production and distribution of Wealth, so far as they depend on the action of the human mind."

I say, "so far as they depend on the action of the human mind," in order to mark to which of the two great genera of sciences, the *material*, or, as they are usually called, the Physical; and the *mental*, or as they are frequently called, the Moral, sciences, Political Economy belongs.

Unquestionably the political economist has much to do with matter. The phenomena attending the production of material wealth occupy a great part of his attention; and these depend mainly on the laws of matter. The efficacy of machinery; the diminishing productiveness, under certain circumstances, of successive applications of capital to land; and the fecundity and longevity of the human species, are all important premises in political economy, and all are laws of matter. But the political economist dwells on them only with reference to the mental phenomena which they serve to

explain; he considers them as among the motives to the accumulation of capital, as among the sources of rent, as among the regulators of profit, and as among the causes which promote or retard the pressure of population on subsistence.

If the main subject of his studies were the physical phenomena attending the production of wealth, a system of political economy must contain a treatise on mechanics, on navigation, on agriculture, on chemistry—in fact, on the subjects of almost all the physical sciences and arts, for there are few of those arts or sciences which are not subservient to wealth. All these details, however, the political economist avoids, or uses a few of them sparingly for the purpose of illustration. He does not attempt to state the mechanical and chemical laws which enable the steam-engine to perform its miracles—he passes them by as laws of matter; but he explains, as fully as his knowledge will allow, the *motives* which induce the mechanist to erect the steam-engine, and the labourer to work it. And these are laws of mind. He leaves to the geologist to explain the laws of matter which occasion the formation of coal, to the chemist to distinguish its component elements, to the engineer to state the means by which it is extracted, and to the teachers of many hundred different arts to point out the uses to which it may be applied. What he reserves to himself is, to explain the laws of mind under which the owner of the soil allows his pastures to be laid waste, and the minerals which they cover to be abstracted; under which the capitalist employs, in sinking shafts and piercing galleries, funds which might be devoted to his own immediate enjoyment; under which the miner encounters the toils and the dangers of his hazardous and laborious occupation; and the laws, also laws of mind, which decide in what proportions the produce, or the value of the produce, is divided between the three classes by whose concurrence it has been obtained.

When he uses as his premises, as he often must do, facts supplied by physical science, he does not attempt to account for them; he is satisfied with stating their existence. If he has to prove it, he looks for his proofs, so far as he can, in the human mind. Thus the economist need not explain why it is that labour cannot be applied to a given extent of land to an indefinite amount with a proportionate return. He has done enough when he has proved that such is the fact; and he proves this by showing, on the principles of human nature, that, if it were otherwise, no land except that which is most fertile and best situated, would be cultivated. All the technical terms, therefore, of political economy, represent either purely Mental ideas, such as *demand, utility, value, and abstinence*; or objects which, though some of them may be material, are considered by the political economist so far only as they are the results or the

causes of certain affections of the human mind, such as *wealth*, *capital*, *rent*, *wages*, and *profits*.

The subject matter of Political Economy is, I repeat, *wealth*. The political economist, as such, has nothing to do with any of the other physical or moral sciences, or with any of the physical or moral arts, excepting so far as they affect the production or distribution of wealth. Whether wealth be a good or an evil; whether it be conducive to human morality or to human happiness, that it be hoarded or that it be consumed, that it be accumulated in masses or that it be generally diffused; are questions beyond his science. His business is to state what are the effects on the production and distribution of wealth, or, to use a shorter expression, the economic effects of accumulation and of expenditure, of the different kinds of consumption, and of the aggregation in few hands, or the division among many, of the things of which wealth consists. Whenever he gives a *precept*, whenever he advises his reader to do anything, or to abstain from doing anything, he wanders from science into Art, generally into the art of morality, or the art of government.

The science of Statistics is far wider as to its subject matter. It applies to all phenomena which can be counted and recorded. It deals equally with matter and with mind. Perhaps the most remarkable results of the statistician's labours are those which show that the human will obeys laws nearly as certain as those which regulate matter.

There are countries in which we find year after year the same number of marriages at the same ages, and in the same proportion to the population, the same number of children to a marriage, the same number of bankruptcies, and the same number of crimes and suicides, committed at the same ages, and by each sex in permanent proportions. In which the average height, the average weight, the average consumption and production of commodities, and the average longevity, of men and of women, continue for long periods unaltered.

There are others in which the number or the proportion of these events varies. In which marriages, births, deaths, crimes, consumption and production, and even the average stature are different at different periods. This uniformity, or these differences, are detected by the statistician. His task is over when he has stated and recorded them. It is the business of the legislator to draw from the figures of the statistician, practical inferences. To ascertain the circumstances, moral, commercial, or political, under which the tribute paid by his countrymen to insolvency, crime, sickness, and death, has been diminished, or has remained stationary. These circumstances will often appear to be under control, and by watching the statistical

results of every attempt to control them, he will ascertain whether they *are* under control or not.

We have been told that a statesman "reads his history in a "nation's eyes." I should rather say that he reads it in a nation's figures.

But it is not only to the statesman that Statistics are useful. Many of the most important and most useful employments of capital depend on them. Vital Statistics are the base of life insurance. They decide the value of annuities, of life estates, and of reversions. Every man in the management of his property has to consult them. The statistics of fires regulate fire insurance, those of wrecks regulate marine insurance. Wherever the success or failure of an undertaking depends on the calculation of chances, and wherever the events subject to those chances have been observed and recorded in numbers sufficient to afford an average, the prudence or imprudence of the undertaking depends on that average. To *give* that average is the business of the statistician. To *act* on it is the business of the speculator. If in London one house in two thousand were burnt down every year, nothing would be gained or lost by insuring houses in London at a shilling per cent. per annum. If one in a thousand were burnt down, such an insurance would be ruinous. If only one in three thousand, it would be very profitable. But, I repeat that the observation, the recording and the arranging facts, which is the science of Statistics, and the ascertaining, from observation and from consciousness, the general laws which regulate men's actions with respect to production and exchange, which is the science of Political Economy, are distinct from the arts to which those sciences are subservient. We cease to be scientific as soon as we advise or dissuade, or even approve or censure.

I said that I had been led into this train of thought by looking through the papers which have been communicated to this Section since 1856. I find that we received during that year "Suggestions "on the Education of the People."

We had a paper on the general principles by which Reformatory schools ought to be regulated. We had another on the importance of open and public Competitive examinations.

In 1857 we had one on the prevention of crime; one on the reasons for extending limited liability to joint stock banks; and one on the apprenticeship system in respect to freedom of Labour.

In 1858 we had one on the principle of open competition; one on public service, academic, and teacher's examinations; one on the importance of a colonial penny postage to the advancement of science and civilization; and one on the race and language of the Gypsies.

If it be said that in all these papers, except indeed the very last,

there was a reference to statistical facts, or to economic principles, and that therefore they were properly communicated to this Section, the answer is, that there is no province of the great arts of legislation, of administration, of commerce, of war, indeed, of any of the arts which deal with human feelings, in which frequent reference must not be made to political economy, and occasional reference to statistics. There is scarcely a moral art therefore of which we should not be able to take cognizance.

But I do not think that such an extension of our jurisdiction would be advisable. I believe that in mental, as in manual arts, the division of labour is useful. Within the strict limits of Economic Science and Statistics, a large field is open to us. It appears to me that we shall do well, if, as far as may be practicable, without much inconvenience, we confine ourselves within it, and deviate as little as we can into the numerous arts to which those sciences afford principles.
